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10/532,685	04/26/2005	Takashi Saitoh	7412/8-4326	4377
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EXAMINER NGUYEN, TRI V				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/532,685

Applicant(s)

SAITOH, TAKASHI

Examiner

TRI V. NGUYEN

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-25 is/are pending in the application.
- 4a) Of the above claim(s) 2-11-13 and 15-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 9, 10, 14, 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Upon entry of the amendment filed on 11/23/07, Claims 1, 3-7, 9, 10, 14, 22-24 are amended; Claims 2, 11-13, 15-21 are withdrawn and Claim 8 is cancelled. The currently pending claims considered below are Claims 1, 3-7, 9, 10, 14, 22-25.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 3-4, 9-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. as applied to the claims above, and further in view of Mitsubishi '930 or Mitsubishi '739.

Chen et al. disclose a composition with nanotubes, a conductive polymer such as polypyrrole which is soluble in water and a solvent (parag. 19 and claim 58).

Chen et al. disclose the composition of claim 1 but do not explicitly disclose the presence of a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

Art Unit: 1796

It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

4. Claims 1, 3-5, 9-10, 14 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchet-Fincher as applied to the claims above, and further in view of Mitsubishi '930 or Mitsubishi '739.

Blanchet-Fincher et al. disclose a composition comprising a carbon nanotube, a solvent, a conducting polymer (e.g. polyaniline and polythiophene), a macromolecule (the high molecular weight compound) and a surfactant (see at least abstract, parag. 12-17, 49-54 and example 34). The composition is mixed using ultrasonication and coated on a substrate and the solvent is

dried (see at least example 34). Regarding claim 8, the water soluble property is an inherent property of the recited conducting polymer.

Blanchet-Fincher disclose the composition of claim 1 but do not explicitly disclose the presence of a high molecular weight compound, a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct,

Art Unit: 1796

not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

5. Claims 1, 3-5, 9-10, 14 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. as applied to the claims above, and further in view of Mitsubishi '930 or Mitsubishi '739.

Glatkowski et al. disclose a composition obtained by mixing a polymer such as a conductive polymer with nanotubes and various additives such as a surfactant in a solvent followed by stirring and sonication. The resulting solution is casted as an electrically conductive film on a substrate and dried by imparting heat (claims 1 and 15; parag. 52-53, 61 and 88-89).

Although Glatkowski et al generally teaches the surfactant and conductive polymer features in their composition, the reference does not require the component(s) with sufficient specificity to constitute anticipation.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have formulated a composition, as taught by Glatkowski et al, which contained a surfactant and a conductive polymer disclosed and taught by Glatkowski et al. therefore, one of ordinary skill in the art would have had a reasonable expectation of success, because such a composition containing a surfactant and a conductive polymer is expressly suggested by the Glatkowski et al disclosure and therefore is an obvious formulation.

Glatkowski et al. disclose the composition of claim 1 but do not explicitly disclose the presence of a high molecular weight compound, a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic

Art Unit: 1796

compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

6. Claims 1, 3-4, 9-10, 14 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eikos, Inc. as applied to the claims above, and further in view of Mitsubishi '930 or Mitsubishi '739.

Eikos, Inc. discloses a composition comprising a solvent, a polymeric matrix such as a conductive polymer and carbon nanotubes (abstract, claims 1, 13 and page 10, lines 7-19). The

composite obtained by mixing and sonication is applied as a coating to a substrate and dried to remove the solvent (page 11, lines 4-11 and page 17, lines 5-15).

Although Eikos, Inc. generally teaches the conductive polymer feature in its composition, the reference does not require the component(s) with sufficient specificity to constitute anticipation.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have formulated a composition, as taught by Eikos, Inc., which contained the conductive polymer disclosed and taught by Eikos, Inc. therefore, one of ordinary skill in the art would have had a reasonable expectation of success, because such a composition containing a conductive polymer is expressly suggested by the Eikos, Inc. disclosure and therefore is an obvious formulation.

Eikos, Inc. disclose the composition of claim 1 but do not explicitly disclose the presence of a high molecular weight compound, a basic compound and a conducting polymer with the functional groups and structure of formula (5).

In an analogous art, Mitsubishi '739 disclose a composition with the water-soluble conducting polymer of formula (5) (page 6, parag. 29-30 and page 12, parag. 59) and a basic compound (page 9, parag. 39-40) and Mitsubishi '930 disclose a composition with the water-soluble conducting polymer of formula (5) (page 4), a high molecular weight component (page 7, parag. 28), a surfactant (page 8, parag. 31) and a basic compound (page 8, parag. 34).

It would have been obvious to a chemical engineer to produce the claimed composition, as the references teach similar ingredients for the same utility. It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious

Art Unit: 1796

because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

Regarding claim 14, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al., Eikos, Inc., Blanchet-Ficher or Chen et al. in view of Mitsubishi '930 or Mitsubishi '739 as applied to claim 1 above, and further in view of Eikos, Inc. (WO 03/013199) and Search Report (Nguyen).

Glatkowski Eikos, Inc., Blanchet-Ficher or Chen et al. disclose the composition of claim 1 but do not explicitly disclose the inclusion of a silane coupling agent of formula (1).

In an analogous art, Eikos, Inc. discloses an electrically conductive composition with the compound of formula (5) (see table 2, page 19). The examiner notes that the search report is relied upon to indicate the structure of the silane present in the Eikos reference. It would be obvious to a skilled artisan to use a silane component to increase the dispersion of nanotubes in a polymeric matrix. Furthermore, it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850,

205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al., Eikos, Inc., Blanchet-Ficher or Chen et al. in view of Mitsubishi '930 or Mitsubishi '739 as applied to claim 1 above, and further in view of Hsu (US 2004/0206942).

Glatkowski et al., Eikos, Inc., Blanchet-Ficher or Chen et al. disclose the composition of claim 1 but do not explicitly disclose the inclusion of a colloidal silica component.

In an analogous art, Hsu discloses an electrically conductive composition with a colloidal component (page 5, parag. 71-72 and example 7, page 13). It would be obvious to a skilled artisan to use a silane component to control the rheology of the nanocomposite. Furthermore, it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, see *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan.

Response to Arguments

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Chen et al. (US 2003/0077515) disclose a conducting polymer-carbon nanotube composition.

10. Applicant's arguments filed on 11/23/07 have been fully considered but they are not persuasive.

- a. Applicants argue that the Chen reference does not teach the features of a doped conducting polymer and the combination with the Mitsubishi references is not obvious (pages 22 and 25). The examiners respectfully remarks that the combination of the Chen and Mitsubishi references teach the claimed inventions as the Chen reference is relied upon to teach a composition with carbon nanotubes and conducting polymers and the Mitsubishi references are relied upon to teach the specific attributes of the conducting polymer. The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.
- b. Applicants argue that the Blanchet-Fincher reference does not teach the features of a doped conducting polymer and the combination with the Mitsubishi references is not obvious (pages 23 and 26). The examiners respectfully remarks that the combination of the Blanchet-Fincher and Mitsubishi references teach the claimed inventions as the Blanchet-Fincher reference is relied upon to teach a composition with carbon nanotubes and conducting polymers and the Mitsubishi references are relied upon to teach the specific attributes of the conducting polymer. The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.
- c. Applicants argue that the Glatkowski reference does not teach the features of a doped conducting polymer and the combination with the Mitsubishi references is not

obvious (pages 24 and 27). The examiners respectfully remarks that the combination of the Glatkowski and Mitsubishi references teach the claimed inventions as the Glatkowski reference is relied upon to teach a composition with carbon nanotubes and conducting polymers and the Mitsubishi references are relied upon to teach the specific attributes of the conducting polymer. The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

d. Applicants argue that the Eikos reference does not teach the features of a doped conducting polymer and the combination with the Mitsubishi references is not obvious (pages 25 and 27). The examiners respectfully remarks that the combination of the Eikos and Mitsubishi references teach the claimed inventions as the Eikos reference is relied upon to teach a composition with carbon nanotubes and conducting polymers and the Mitsubishi references are relied upon to teach the specific attributes of the conducting polymer. The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of a skilled artisan. It would have been well within the purview of a skilled artisan in the art to arrive at a composition with enhanced film forming properties via functionalization of the conductive polymer.

e. Applicants argue about the citation of the Eikos and Nguyen references regarding claim 6 (page 28). The examiner respectfully notes that the Eikos reference indicates a composition with a silane compound in table 2 on page 19 and the Nguyen

search report (as a prior art to further describe the Eikos reference) is relied upon to show the structure of the silane compound of formula (1) present in the Eikos reference.

f. Applicants argue that claim 7 is not obvious (page 28). The examiner respectfully disagrees as the combination is obvious since a particular known technique (the feature of a silane component to control the rheology of the nanocomposite) was recognized as part of the ordinary capabilities of a skilled artisan.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1796

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRI V. NGUYEN whose telephone number is (571)272-6965. The examiner can normally be reached on M-F 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tri V Nguyen/
Examiner, Art Unit 1796
2/11/2008

/Mark Kopec/
Primary Examiner, Art Unit 1796